



## **Part 1: Definitions**

### **Section 1.1: Definitions**

- 1.1.1 All definitions from the Act and the regulations apply except where expressly defined in this approval.
- 1.1.2 In this approval:
- (a) **bioremediation (or biodegradation)** means any process (e.g. bioaugmentation and biostimulation etc) that uses microorganisms or their enzymes to attack petroleum hydrocarbon contaminants;
  - (b) **bioaugmentation** means the introduction of group of natural microbial strains or a genetically engineered variant to treat petroleum hydrocarbon contaminated soil;
  - (c) **biostimulation** means the modification or optimization of the microbial environment to entice or promote the existing microbial activity resulting in mineralization of the petroleum hydrocarbon contaminants;
  - (b) **BTEX** means benzene, toluene, ethylbenzene, and xylene;
  - (c) **CCME** means Canadian Council of Ministers of the Environment;
  - (d) **CEPA** means Canadian Environment Protection Act;
  - (e) **CEQG** means CCME Canadian Environmental Quality Guidelines;
  - (f) **contaminant** means, unless otherwise defined in the regulations, a substance that causes or may cause an adverse effect;
  - (g) **Department** means Department of Environment and Climate Change;
  - (h) **Director** means the Director of the Pollution Prevention Division of the Department;
  - (i) **EPO** means Environmental Protection Officer of Service NL;
  - (j) **field portable test method** means PetroFlag or an equivalent;
  - (k) **industrial wastewater** means the composite of liquid wastes and water-carried wastes, any portion of which results from any industrial process carried on at the facility;
  - (l) **MSDS** means material safety data sheets;

- (m) **Minister** means the Minister of the Department of Environment and Climate Change;
- (n) **OHS** means occupational health and safety;
- (o) **PAH** means polycyclic aromatic hydrocarbons;
- (p) **PCS** means petroleum contaminated soils which: (a) have absorbed or adsorbed gasoline, diesel/furnace oil, mineral oil, kerosene, hydraulic oil, aviation fuel and other petroleum hydrocarbon compounds, mixtures and blends (C2-C32). This does not include Bunker C, crude oil or drilling fluids unless otherwise approved by the Service NL (b) contain equal to or greater than 1000 ppm total petroleum hydrocarbons **OR** exceed limits for BTEX as outlined in the latest edition of CEQG (industrial land use for soil); (c) do not contain PAH composed of more than four benzenoid rings in excess of concentrations normally found in the products noted in item (a) above (greases, and heavy lubricating oils are likely to contain compounds having more than four benzenoid rings); (d) do not contain petroleum and/or metal concentrations at levels toxic to microbes. Microbial toxicity testing maybe be required by the Department to demonstrate that it is possible to bio-remediate the suspect soil; and (e) do not contain metal concentrations which are leachable as determined by the *Toxicity Characteristic Leaching Procedure* as defined in Schedule II of *The Interprovincial Movement of Hazardous Waste and Hazardous Recyclable Material Regulations under the CEPA, 2004*.
- (q) **professional engineer** means an individual or company that is a member in good standing with the Professional Engineers and Geoscientists of Newfoundland and Labrador (PEGNL) licensed to practice engineering in a field related to the task performed;
- (r) **QA/QC** means Quality Assurance/Quality Control;
- (s) **regional Director** means the Director of the nearest Service NL;
- (t) **site professional (engineer)** means a professional engineer with professional errors and omissions liability insurance coverage for environmental work of at least \$1,000,000 individually or through a registered company;
- (u) **SPLP** means synthetic precipitation leaching procedure (US EPA Method 1312);
- (v) **TCLP** means toxicity characteristics leaching protocol as per US EPA

Method 1311;

- (w) **third party site professional (engineer)** means a site professional engineer whom is not an employee of the proponent;
- (x) **TPH** means total petroleum hydrocarbons as measured by the Atlantic PIRI method;
- (y) **UESI** means Universal Environmental Services Incorporated;
- (z) **US EPA** means United States Environmental Protection Agency, and
- (dd) **USGPM** means US gallons per minute. It should be noted that 1 US gallon is approximately equal to 0.8326 imperial gallon or 3.785 litres.

## **Part 2: General**

### **Section 2.1: General**

- 2.1.1 This approval applies to Universal Environmental Services Incorporated for the continued operation of the permanent facility to bioremediate petroleum contaminated soil located at St. John's, NL.
- 2.1.2 Prior to any expansion or modification of the facility, a letter of application shall be forwarded to the Department requesting an amendment to this approval.
- 2.1.3 The Minister may at any time, with reasonable notice, require the approval holder to conduct or have conducted environmental studies, site assessments, sampling, testing, or investigations where, based upon reasonable and probable grounds the Minister believes that this waste management system may have had, or has the potential to have, an adverse effect on the environment.
- 2.1.4 This facility is only approved to treat PCS using bioremediation technology/process, unless otherwise approved in writing by the Department.
- 2.1.5 Through a Memorandum-of-Understanding (MOU) this Department has authorized SNL to act on their behalf in monitoring this operation for compliance under this approval and all applicable provincial Acts and Regulations.
- 2.1.6 Contaminated soil shall only be accepted during normal working hours with the exception of contaminated soil from an emergency oil spill response.
- 2.1.7 All contaminated soils received at the facility shall be placed on the approved receiving and/or treatment pads.

- 2.1.8 The facility shall be kept fenced and a lockable gate shall be at the entrance to prevent unauthorized access.
- 2.1.9 A sign shall be posted at the gate listing the company name, hours of operation and contact name and number in an event of an emergency situation. Other signage relating to access restrictions and fir/health/safety restriction shall be prominently displayed.
- 2.1.10 The facility is not approved to accept waste petroleum liquids for storage, discharge, or treatment.
- 2.1.11 The maximum approved capacity for this facility is **36,000 tonnes** of PCS.

### **Section 2.2: Contingency Plan**

- 2.2.1 UESI shall maintain the environmental emergency health & safety contingency plan and shall continue submitting the annual updates for review and approval by **January 31** of the following year to the Department.
- 2.2.2 UESI shall ensure that a copy of this approval is kept on site at all times and that personnel directly involved in the operation of the remediation facility are made fully aware of the terms and conditions which pertain to this approval.
- 2.2.3 All responsible personnel who are directly involved with operation and maintenance of the processing system shall be provided with the copy of this approval.
- 2.2.4 In case of emergency UESI shall call emergencies and spill report line: **1-800-563-9089 or (709) 772-2083**.
- 2.2.5 The operator(s) shall have formal environmental training from a recognized institution or equivalent experience. Proof of training and/or resume(s) shall be provided to the Department upon request.

### **Section 2.3: Legislation & Guidelines**

- 2.3.1 The activities associated with this operation may involve, but not be limited to the following provincial Acts and Regulations:
- *Dangerous Goods Transportation Act and Regulations*
  - *Newfoundland Fire Prevention Act and Regulations*
  - *Environmental Protection Act*
  - *Air Pollution Control Regulations*
  - *Storage and Handling of Gasoline and Associated Products Regulations*

- *Used Oil Control Regulations*
- *Water Resources Act*
- *Environmental Control Water and Sewage Regulations*

2.3.2 The activities associated with this operation may involve, but not be limited to the following federal Acts and Regulations:

- *Canadian Environmental Protection Act and Regulations*
- *Interprovincial Movement of Hazardous Waste and Hazardous Recyclable Material Regulations*
- *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations*
- *Transportation of Dangerous Goods Act and Regulations*
- *Fisheries Act*
- *National Fire Code*

2.3.3 UESI shall operate this permanent PCS treatment facility according to the *Guidelines for Construction and Operation of Facilities Using Ex-Situ Bioremediation for the Treatment of Petroleum Contaminated Soil: GD-PPD-013 rev.4 or other revisions.*

#### **Section 2.4: Financial Security / Assurance**

- 2.4.1 UESI shall maintain valid environmental liability impairment insurance in the amount of \$1,000,000 otherwise this approval is considered null and void.
- 2.4.2 UESI shall maintain a surety bond of \$20,000 with the Department, otherwise this approval is considered null and void.
- 2.4.3 UESI shall submit the annual updates of the financial assurance to the Department.
- 2.4.4 UESI shall provide three months advance notice to the Department if they intend to cancel and/or change the insurer or bonding agent.

#### **Section 2.5: Record Keeping**

- 2.5.1 UESI shall record and retain all information in respect of any sampling conducted or analyses performed in accordance with this approval for a minimum of five years, unless otherwise authorized in writing by the Director.
- 2.5.2 UESI shall record and retain all the following information for a minimum of five years:
- (a) the name and address of the person(s) who make/discover any contravention of the Act, the regulations or this approval; and

- (b) a detailed description of the remedial actions/measures taken in respect of the contravention of the Act, the regulations or this approval.

### **PART 3: Construction**

NOT USED AT THIS TIME

### **PART 4: Operations, Limits, Monitoring and Reporting**

#### **Section 4.1: General**

- 4.1.1 The approval holder shall maintain and operate the facility as described in the application submitted to the Department dated July 2005, entitled "*MANUAL - Construction, Operation and Decommissioning of a Biopile Facility for Treatment of Petroleum Contaminated Soil, St. John's, Newfoundland*", prepared by AFN Engineering Inc., AFN Project # 5-143.
- 4.1.2 The approval holder shall have on site as described in the application, all of the following:
- (a) Three (3) Treatment Pads.
  - (b) One Receiving Pad, and
  - (c) Two (2) Leachate Holding Tanks with Shut off Valves.

#### **Section 4.2: Bioremediation of PCS**

##### **Operation**

- 4.2.1 The use of cultured microbes may be regulated under the federal *New Substances Notification Regulations* under the Canadian *Environmental Protection Act*. For additional information on these regulations contact Environment Canada at (902) 426-9674. A copy of the notification shall be provided to the Department.
- 4.2.2 Covering of soils is permitted to control soil moisture content and temperature.
- 4.2.3 When required, moisture addition to the biopiles shall be accomplished utilizing collected wastewater. Any additional water may be taken from an approved on-site water supply.
- 4.2.4 If constructed, all ductwork shall be mapped and marked to avoid any destruction during sample excavation.

4.2.5 Mixing of clean soil with contaminated soil is prohibited. However, soils delivered to the site having a high percentage of clay and silt particles may be amended and/or internal ductwork installed to increase permeability. Acceptable material for soil amendments include: sand, straw, sawdust, woodchips and coarse grained petroleum contaminated soil.

### **Limits**

4.2.6 Prior to removal of the treated soil from the site, compliance sampling shall be conducted to achieve the following:

- BTEX concentrations shall be below the industrial limits for soil in the latest edition of the CEQG; and
- TPH concentration shall be equal or less than 1000 mg/kg (ppm)

4.2.7 Soils with TPH less than 1000 ppm may be removed from treatment pad to facilitate further treatment of underlying soils.

### **Monitoring and Reporting**

4.2.8 The curbs/berms surrounding and dividing the pads shall be inspected monthly. All damage, tears, cracks or other deterioration shall be repaired immediately.

4.2.9 The pads shall be cleaned thoroughly and visually inspected at least annually. All damage, tears, cracks, and other deterioration shall be repaired immediately.

4.2.10 The top of the curb/berm surrounding and dividing the receiving and treatment pads shall at all times be a minimum of 200 mm above the pads' permanent working surface located immediately adjacent to and within 600 mm of the exposed base of the curb. The working surface is defined as the permanent surface on which the contaminated soil is placed and may consist of a fixed layer of granular material or the original material of construction.

4.2.11 A minimum of 200 mm curb height shall be maintained above the pads at all times. Soil shall be placed on the treatment and receiving pads in a manner which provides for the continuous flow of accumulated rainfall and/or leachate along the curb toward the centralized locations/catch basin(s) leading to the leachate holding tanks.

4.2.12 The curb/berm surrounding the treatment and receiving pads shall at all times be clearly visible and shall not be covered with soil.

4.2.13 All overflows of accumulated waste water over the pads shall be collected and treated. These shall be considered a spill as defined in the *Storage and Handling*

- of Gasoline and Associated Products Regulations*. This includes standard reporting and response actions. Response and cleanup activity may cease once laboratory results of the waste water and impacted soils reveal levels are within allowable levels for parameters of concern. Until this has been confirmed, response and cleanup shall proceed under the assumption that the waste water exceeds allowable limits as per regulations and guidelines and is likely to cause pollution.
- 4.2.14 All soils received at the facility shall have a **complete chemical analysis** of the petroleum contaminated soil. The complete chemical analysis of the typical PCS must include TPH, BTEX and soil pH. Analysis for metals, PAH and other contaminants of concern will be required on a site specific basis.
- 4.2.15 If pre-delivery soil analysis for the contaminated soil has not been provided by the client, then UESI must provide one sample for every **1500 tonnes** or less unless otherwise authorized in writing by the Director. The soil shall be well mixed to ensure the sample is representative. More intensive sampling will be required if the source of the soil suggests that other contaminants may be present. Soil characterization determined through an environmental site assessment conducted by an independent, qualified and experienced company is deemed sufficient.
- 4.2.16 This facility may accept up to **1500 tonnes** of PCS from an emergency response incident without prior sampling or testing, with the prior approval of the Director. The untested material shall be stored separately on the receiving and/or treatment pad until baseline testing is conducted.
- 4.2.17 All soils with analysis showing contaminants in excess of limits as prescribed in the latest edition of the CEQG shall be considered contaminated. For parameters not listed in the CEQG consultation with SNL is required.
- 4.2.18 If the source/historical information of the contaminated soil suggest that soil may be of hazardous nature, additional laboratory analysis shall be carried out as recommended by an independent consultant or as required by the SNL.
- 4.2.19 Soils containing contaminants which would cause them to be classified as waste dangerous goods, as defined in the *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations* under the *CEPA* and in provisions under the Newfoundland and Labrador *Environmental Protection Act (SNL 2002)*, shall not be accepted for treatment and/or storage.
- 4.2.20 Hazardous wastes shall not be accepted at this facility for treatment and/or storage. Hazardous wastes are those which are corrosive, reactive, flammable, ignitable, carcinogenic, teratogenic, mutagenic, infectious, oxidizing, radioactive, explosive, poisonous/toxic (i.e. acute and chronic), bioaccumulative, persistent, TCLP defined leachable or any waste which does not meet any of the above criteria but has other properties of concern which are significant enough to

consider the material to be hazardous. Where there exists any doubt regarding the properties of a given waste, consultation with the SNL is required.

- 4.2.21 At least five working days advance notice to Department and SNL of the intent to conduct **post treatment sampling** is required.
- 4.2.22 Post-treatment soil sampling shall be conducted or witnessed by a third party site professional (engineer). The sampling results shall be stamped, signed (by a third party site professional) and submitted to the Director.
- 4.2.23 Where laboratory results indicate that some samples do not meet these criteria, additional sampling may be conducted to delineate the volume in question.
- 4.2.24 At a minimum, **post-treatment compliance** (composite) sampling shall be done along the longitudinal axis of the biopile, starting at 2 metres inside the margins from either end of the biopile and then at 12m intervals. A composite sample shall be collected at each location comprised of bulk samples at 0.6m vertical intervals at the location.
- 4.2.25 Disposal or storage of treated soils on site is not permitted. Treated soils shall be disposed of at approved waste disposal sites with the permission of the owner/operator. ***Reuse of treated soil at any other location is not permitted***, unless otherwise approved by the Department.
- 4.2.26 An Annual Report shall be submitted to the Department and SNL by ***January 31*** of the following year summarizing activities of the previous year. The report shall include at a minimum:
- (a) date and time of arrival of contaminated soil;
  - (b) source name and address for contaminated soil;
  - (c) quantity (i.e. tonnes or cubic meters) of contaminated soil;
  - (d) client name and trucking company;
  - (e) name of project manager or onsite supervisor authorizing the shipment;
  - (f) total amount of treated soil removed from the site;
  - (g) the disposal location of the treated soil;
  - (h) copies of current letters from the owner operator of disposal sites;
  - (i) post treatment laboratory results;
  - (j) current insurance and bonding information;

- (k) monitoring well sampling results, and
- (l) leachate holding tanks maintenance, sampling and discharge volumes.

4.2.27 All incidents of:

- (a) contingency plan implementation;
- (b) spillage or leakage of a regulated substance;
- (c) whenever discharge criteria is or is suspected to be exceeded, or
- (d) public complaints concerning possible non-compliance,

shall be immediately reported, within one working day, to a person or message manager or facsimile machine at the nearest Service NL office.

## **Section 4.2: Industrial Wastewater**

### **Operations**

- 4.2.1 The approval holder shall not release any substances from the facility to the surrounding watershed/environment except as authorized by this approval.
- 4.2.2 The industrial wastewater/leachate shall be managed as described in the application (*AFN Project # 5-143, dated July 2005*), unless otherwise authorized in writing by the Director.
- 4.2.3 All industrial wastewater/leachate shall be directed to the leachate holding tanks.
- 4.2.4 The leachate holding tanks shall be cleaned on a regular basis of sediments as preventive maintenance.

### **Limits**

- 4.2.5 Releases from the leachate holding tanks shall not exceed the limits at a minimum for the parameters specified in TABLE 4.2-A.
- 4.2.6 Reports containing the required sampling parameters and volume information shall be received by the Director, in digital format **within 30 calendar days of the release**. All related laboratory reports shall also be submitted, in spreadsheet format (Microsoft Excel or a format easily transferrable to Excel), and either Adobe Portable Document Format (.pdf) or hardcopy format. Digital report submissions, if e-mailed, shall be sent to the following address: [statenv@gov.nl.ca](mailto:statenv@gov.nl.ca)

TABLE 4.2-A: Wastewater/Leachate Limits

Parameters	Sample Type	Limits
pH	Grab	5.5 to 9.0 pH units
Oil and Grease	Visual	No visible sheen
TPH	Grab	15 mg/L
Total Suspended Solids	Grab	30 mg/L
Ammonia Nitrogen	Grab	2.0 mg/L
Cadmium	Grab	0.05mg/L
Copper	Grab	0.3mg/L
Zinc	Grab	0.5mg/L
Nickel	Grab	0.5mg/L
Mercury	Grab	0.005mg/L
Lead	Grab	0.2mg/L
Benzene	Grab	370 µg/L
Toluene	Grab	2.0 µg/L
Ethylbenzene	Grab	90 µg/L
Xylene	Grab	180 µg/L

### **Section 4.3 Groundwater Monitoring Wells**

- 4.3.1 The approval holder shall conduct groundwater sampling and analyses as authorized by the Director. The six (6) groundwater monitoring wells shall be sampled annually during **May or June** and shall be analyzed for TPH including BTEX.
- 4.3.2 Monitoring well data shall be included in the Annual Report containing the required sampling parameters. All related laboratory reports shall also be submitted, in spreadsheet format (Microsoft Excel or a format easily transferrable to Excel), and either Adobe Portable Document Format (.pdf) or hardcopy format. Digital report submissions, if e-mailed, shall be sent to the following address: [statenv@gov.nl.ca](mailto:statenv@gov.nl.ca)
- 4.3.3 All monitoring wells for installation and maintenance shall follow the *CCME Subsurface Assessment Handbook for Contaminated Sites EPC-NCSRP-48E March 1994*.
- 4.3.4 If a representative groundwater sample cannot be collected because the groundwater monitor well is damaged or is no longer capable of producing a representative groundwater sample:
- (a) the groundwater monitor well shall be cleaned, repaired or replaced, and
  - (b) a representative groundwater sample shall be collected and analyzed as soon as possible, unless otherwise authorized in writing by the Director.

**Part 5: Decommissioning and Reclamation**

- 5.1.1 The approval holder shall develop and submit a plan for the Decommissioning to the Director which shall include, at a minimum, all of the following:
- (a) a plan for dismantling the facility;
  - (b) a comprehensive study to determine the nature, degree and extent of contamination at the facility and affected lands;
  - (c) a plan to manage all wastes produced at the facility during operation and Decommissioning, and
  - (d) evaluation of remediation technologies proposed to be used at the plant and affected lands.
- 5.1.2 The approval holder shall implement the Decommissioning plan as authorized in writing by the Director.
- 5.1.3 The approval holder shall develop and submit a plan for the Land Reclamation to the Director which shall include, at a minimum, all of the following:
- (a) the final use of the reclaimed area and how equivalent land capability will be achieved;
  - (b) removal of infrastructure;
  - (c) restoration of drainage;
  - (d) soil replacement;
  - (e) erosion control, and
  - (f) re-vegetation.
- 5.1.4 The approval holder shall implement the Land Reclamation plan as authorized in writing by the Director.
- 5.1.5 The Decommissioning and Land Reclamation Plan in Section 5.1.1 and 5.1.3 shall be submitted within three (3) months of the facility ceasing operation, unless otherwise authorized in writing by the Director.

**Part 6: Expiration**

- 6.1.1 This approval expires as indicated on the cover sheet of this approval.
- 6.1.2 Should the approval holder wish to continue to operate beyond this expiry date, a written request shall be submitted to Director for the renewal of this approval, *six (6) weeks prior to expiration.*

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